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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/012,674 01/23/98 PRATER

M 19536-706-00

EXAMINER

LM02/0820

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SEALEY, L	
ART UNIT	PAPER NUMBER

2772

DATE MAILED:

08/20/99

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/012,674

Applicant(s)

Prater

Examiner

Lance Sealey

Group Art Unit

2772

☒ Responsive to communication(s) filed on Jan 23, 1998

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-10 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-10 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. (U.S. Patent No. 5,900,850) in view of Glassner, Principles of Digital Image Synthesis ("Glassner").

3. Bailey, in disclosing a portable large scale image display system, also discloses a method for illuminating surfaces in computer graphics constructing one or more finite light sources within a computer animated scene. Each of the finite light sources is a sphere (claim 6; **34**, FIG.6) having a finite size and a center (claim 1; Abstract, 2nd sentence); and the method further consists of constructing a plurality of surfaces with the scene, each surface consisting of a plurality of points (claim 1; Abstract, 3rd sentence). Moreover, a portion of each of the light sources illuminates each of the points (claim 2; Abstract, 3rd sentence).

4. However, Bailey does not disclose (claim 1) an approximation of the illumination effect of

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each of the finite light sources by the use of a plurality of point light sources of varying intensity; (claim 3) approximately calculating a light intensity and a light vector direction as a function of the portion of each of the light sources which illuminates each of the points; (claim 4) calculating the light intensity as a function of the portion of the light source which illuminates each of the points; and (claim 5) approximating the light vector direction as a function of the portion of the light source shined upon the point. Such approximations and calculations are disclosed by Glassner.

5. Glassner, in disclosing a radiance equation which completely captures the distribution of (finite) light in a scene, fulfills the third part of claim 1 in the first sentence of section 17.1. Claims 3-5 are fulfilled in the third paragraph of 17.2 ("radiance" is equivalent to light intensity; w is the vector).

6. Therefore, it would have been obvious to one of ordinary skill in the art to have modified the Bailey portable large scale image display system in view of the Glassner radiance equation by adding the equation to the code executed by Bailey's CPU 46 in order to approximate the illumination effect of the finite light sources. Such a modification to Bailey would provide a higher quality image because of better calculation of the effect of the finite light sources on the display.

Claim Rejections - 35 USC § 102

7. The following is a quotation of 35 U.S.C. 102(b) which forms the basis for all novelty

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rejections set forth in this Office action:

A person shall be entitled to a patent unless—

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Takizawa et al. ("Takizawa," U.S. Pat. No. 5,572,635).

9. Takizawa, in disclosing a method for changing a natural image based on a light environment in the natural image, also discloses (claim 7) a method for illuminating surfaces in computer graphics comprising the steps of constructing a hemispherical light source of infinite radius (sky light, Abstract, 4th sentence); constructing a plurality of surfaces with said scene said surfaces consisting of a plurality of points (natural image, Abstract, 2nd sentence); and approximation of the illumination effect of each of the hemispherical light source by the use of a plurality of point light sources (Abstract, 3rd to 5th sentences). Takizawa further discloses (claim 8) the step of calculating a light intensity and a light vector direction as a function of a portion of the light source which illuminates each of the points (25, FIG.2). Moreover, Takizawa discloses (claim 9) that the light vector direction is a function of the portion of said hemispherical light source which shines upon said point (col.12, ll.12-18). Finally (claim 10), the intensity of the light source is a function of the portion of said hemispherical light source which shines upon said point (col.12, ll.12-18).

10. In view of the foregoing, the examiner concludes that claims 7-10 have been anticipated by Takizawa.

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Conclusion

11. Any inquiry concerning this communication should be directed to Exr. Lance W. Sealey at (703) 305-0026 (voice), (703) 308-6606 (fax).

A handwritten signature in black ink, appearing to read 'Mark R. Powell', with a long horizontal flourish extending to the right.

MARK R. POWELL
SUPERVISORY PATENT EXAMINER
GROUP 2700